David Boetius (he/him)

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Education

2023–present	**PhD in Computer Science**, University of Konstanz, Germany *Topic: Verified Explanations of Deep Learning Models. Advisors: Stefan Leue and Tobias Sutter.*
2023	**M.Sc. in Computer Science**, University of Konstanz, Germany
2021	**B.Sc. in Computer Science**, University of Konstanz, Germany
2015–2016	**Junior Studies in Computer Science**, LMU Munich, Germany

Research Interests

Trustworthy AI · Formal Methods · Fairness & Safety · Control Theory · Robotics

Publications

[*] *equal contribution* [α] *authors listed alphabetically*

1. **David Boetius**[*], Shahaf Bassan[*], Guy Katz, Stefan Leue, Tobias Sutter: *Verified SHAP: Provable Bounds for Exact Shapley Values of Neural Networks*. **ICML 2026** (to appear)
2. **David Boetius**, Stefan Leue, Tobias Sutter: *Solving Probabilistic Verification Problems of Neural Networks using Branch and Bound*. **ICML 2025**
3. **David Boetius**, Stefan Leue, Tobias Sutter: *A Robust Optimisation Perspective on Counterexample-Guided Repair of Neural Networks*. **ICML 2023**
4. **David Boetius**, Stefan Leue: *Verifying Global Neural Network Specifications using Hyperproperties*. FoMLAS@CAV 2023
5. [α]Fabian Bauer-Marquart, **David Boetius**, Stefan Leue, Christian Schilling: *SpecRepair: Counter-Example Guided Safety Repair of Deep Neural Networks*. SPIN 2022

Preprints

6. **David Boetius**, Abdelrahman Abdelnaby, Ashok Kumar, Stefan Leue, Abdalla Swikir, Fares J. Abu-Dakka: *Stable Robot Motions on Manifolds: Learning Lyapunov-Constrained Neural Manifold ODEs*. *Preprint, Currently Under Review*, 2025
7. **David Boetius**, Stefan Leue: *Counterexample-Guided Repair of Reinforcement Learning Systems Using Safety Critics*. *Preprint*, 2024

Academic Appointments

2023–present	**Doctoral Researcher**, Software and Systems Engineering Group, University of Konstanz
2020–2023	**Student Assistant**, Software and Systems Engineering Group, University of Konstanz
2018–2019	**Student Assistant**, Data Analysis and Visualization Group, University of Konstanz

Service

Reviewer: *ICML, ICLR, NeurIPS, ICRA, CAV, **TMLR**, ETAPS Artifact Evaluation.*

Recognition

2026	**ICML Gold Reviewer**, *top 25% reviewer*
2025	**ICML Top Reviewer**, *top 200 reviewer*

Talks

2026 **Verified SHAP: Provable Bounds for Exact Shapley Values of Neural Networks**, SAIV@CAV 2026 (upcoming)

2026 **Probabilistic Verification of Neural Networks using Branch and Bound**, Online invited talk, Katz Lab, Hebrew University of Jerusalem

2026 **Verified SHAP: Provable Bounds for Exact Shapley Values of Neural Networks**, Research Day, University of St.Gallen

2026 **Stable Robot Motions on Manifolds: Learning Lyapunov-Constrained Neural Manifold ODEs**, Invited talk, Short Cyber-Physical Seminar, University of Konstanz

2023 **Verifying Global Neural Network Specifications using Hyperproperties**, FoMLAS@CAV 2023

2023 **Does Counterexample-Guided Repair of Neural Networks Terminate?**, Invited talk, Cyber-Physical Systems Research Unit, TU Wien

2022 **SpecRepair: Counter-Example Guided Safety Repair of Deep Neural Networks**, Internal seminar, University Children's Hospital Basel (UKBB)

Open-Source Software

Released: *VeriSHAP* · *ProbSpecs* · *SpecRepair*

Teaching

Lead Instructor & Course Design

2026 **Formal Verification of Neural Networks**
Flipped-classroom course where students learn about neural network verification from the ground up. The students solve a semester-long coding project on implementing a neural network verifier and present research papers on the topic. I designed the course structure, the reading list, the coding project, and gave several introductory lectures at the beginning of the semester.

2024–2025 **Artificial Intelligence in Software Engineering**
Flipped-classroom course where students learn about recent trends for applying artificial intelligence in software engineering by reading and presenting research papers on the topic. I designed the reading list and gave two introductory lectures at the beginning of the semester.

Teaching Assistant

2023–2026 **Software Engineering**

2024 **Probability Theory**

2024–2025 **Advanced Verification of Software and Systems**

2023 **Decision Procedures for Software Verification**

2023 **Verification of Cyber-Physical Systems**

Student Supervision

2024–present **Advised four Bachelor and three Master theses**

2023–present **Supervised eight student assistants**

Leadership & Outreach

2020–2026 **Lead Organizer**, Campus Garden, University of Konstanz

2019–2023 **Organizer**, Sustainability Weeks, University of Konstanz

2019–2020 **Student Senator**, Senate of the University of Konstanz

2018–2020 **Faction Representative**, General Students' Committee, University of Konstanz

2018–2020 **Student Parliament Member**, University of Konstanz